

Claims

- [c1] 1.A protection device for high intensity radiation sources comprising:
- (a)a housing member lined at least in part with a reflective coating, and with at least one bend portion;
 - (b)at least one radiation source in the housing member;
 - (c)a cooling unit that cools the housing member; and
 - (d)an opening,
- wherein said radiation source emits radiation which is reflected by said bend portion to exit through said opening.
- [c2] 2.The protection device of claim 1 further comprising at least one relatively straight portion.
- [c3] 3.The protection device of claim 2 further comprising at least one shield generator.
- [c4] 4.The protection device of claim 3, wherein at least one shield generator is behind the radiation source.
- [c5] 5.The protection device of claim 3, wherein at least one shield generator is on a side of the housing member.
- [c6] 6.The protection device of claim 1, wherein the housing

member is made from: (a) brass, (b) copper, (c) a heat conducting material, or (d) a mixture thereof.

[c7] 7.The protection device of claim 3, wherein the housing member is made from: (a) brass, (b) copper, (c) a heat conducting material, or (d) a mixture thereof.

[c8] 8.The protection device of claim 1, wherein the reflective coating is a reflective foil.

[c9] 9.The protection device of claim 3, wherein the reflective coating is a reflective foil.

[c10] 10.The protection device of claim 1, wherein the housing member is completely lined with the reflective coating.

[c11] 11.The protection device of claim 3, wherein the housing member is completely lined with the reflective coating.

[c12] 12.The protection device of claim 1, wherein the radiation emitted by the radiation source is focused by the housing member.

[c13] 13.The protection device of claim 3, wherein the radiation emitted by the radiation source is focused by the housing member.

[c14] 14.The protection device of claim 2, wherein the housing member has two bend portions.

- [c15] 15.The protection device of claim 3, wherein the housing member has two bend portions.
- [c16] 16.A method for preventing particulate matter from contacting a bulb of a high intensity radiation source comprising directing radiation that is emitted from the high intensity radiation source along the inside of a housing member that is: (a) lined at least in part with a reflective coating and (b) is cooled, towards an opening defined by the housing member, said opening being in any but a direct line of travel, along the inside of the housing member, from the radiation source.
- [c17] 17.The method of claim 16, further comprising directing a stream of fluid in a direction away from the high intensity radiation source and towards the opening.
- [c18] 18.The method of claim 17, further comprising directing the stream of fluid from behind the high intensity radiation source.
- [c19] 19.The method of claim 17, further comprising directing the stream of fluid from one side of the housing member.
- [c20] 20.The method of claim 16, wherein the housing member is made from: (a) brass, (b) copper, (c) a heat con-

ducting material, or (d) a mixture thereof.

- [c21] 21.The method of claim 17, wherein the housing member is made from: (a) brass, (b) copper, (c) a heat conducting material, or (d) a mixture thereof.
- [c22] 22.The method of claim 16, wherein the reflective coating is a reflective foil.
- [c23] 23.The method of claim 17, wherein the reflective coating is a reflective foil.
- [c24] 24.The method of claim 16, wherein the housing member is completely lined with the reflective coating.
- [c25] 25.The method of claim 17, wherein the housing member is completely lined with the reflective coating.
- [c26] 26.The method of claim 16, wherein the radiation emitted by the radiation source is focused by the housing member.
- [c27] 27.The method of claim 17, wherein the radiation emitted by the radiation source is focused by the housing member.
- [c28] 28.The protection device of claim 1, wherein the radiation source is secured in the housing using a sealing mechanism that prevents air, gas, other fluids and par-

ticulates from entering the housing.

[c29] 29. The method of claim 16, further comprising sealing the housing member at the position where the high intensity radiation source is connected to the housing member, so that air, gas, other fluids and particulates cannot enter into the housing member from that position.